



10 September 2020

Australian Energy Market Commission

Lodged online: www.aemc.gov.au

Dear Sir/Madam,

Distributed Energy Resources Integration – Updating Regulatory Arrangements

Origin Energy Limited (Origin) welcomes the opportunity to provide comments on the Distributed Energy Resources (DER) Integration – Updating Regulatory Arrangements consultation paper.

Origin is a large Australian integrated energy company with activities in energy retailing, power generation and natural gas production. Origin also has recent experience in exploring new product offerings and has focused on areas such as solar & storage and connected homes. We currently have over 85 MW of demand response capability and have just launched a new residential demand response app called Spike. We view the integration of DER as a key long-term reform and have been involved in the Distributed Energy Integration Program (DEIP) access and pricing workshops which have contributed to these rule change proposals.

We view the proposed rule changes as raising two key issues:

- Distribution assets - how to better incentivise investment in increasing levels of export capacity for DER
- Export pricing – how to more efficiently and equitably price the export of energy from increasing levels of DER

Regarding the first issue, we are generally supportive of improved incentives for Distributed Network Service Providers (DNSPs) to invest in export capacity for DER. However, we believe this must be balanced with a disciplined approach to investment to avoid unnecessary costs to customers.

The second issue is more contentious. Whilst we are generally supportive of the economic arguments made in favour of a price signal placed on exports, we are not convinced that the proposals have fully addressed the practical impacts on DER customers. Some customers may find the change too complex whilst others may not be able to respond to the proposed price signal. Whilst we understand that retail customers do not need to face the exact distribution price charge, there needs to be a practical way to pass this through which will involve a trade-off between accuracy and simplicity. The rule changes proposals have not made the case for how this would occur.

Further, the implementation of such an export charge may be influenced by related changes at the jurisdictional or network level. For example, South Australia is currently implementing a range of changes to distributed solar systems including the requirement for remote disconnection as well as new solar sponge tariffs. Western Australia has also recently announced changes to its solar feed-in tariffs moving from one flat rate to a peak and off-peak rate. These changes at the state level could largely outweigh the price signals from the export tariffs proposed in this rule change.

In summary, our key points are as follows:

- **Incentives for improved network expenditure** – we support in principle the application of an incentive scheme to export services investment. We consider the scheme should provide both an incentive for DNSPs to invest in export services, and also establish performance parameters against which to measure achievement of expenditure objectives and the needs of stakeholders. We do not consider the Service Target Performance Incentive Scheme (STPIS) to be appropriate and suggest that an incentive mechanism tailored to DER exports be developed.
- **Pricing of export services** – the economic arguments made in favour of a price signal placed on exports have merit, but we are not convinced that the proposals have fully addressed the practical impacts on DER customers. We suggest that the AEMC undertake further detailed analysis of both how the price signals may impact DER customers and how they could best be implemented at the state or network level.

Origin is a member of the Clean Energy Council and generally supports its submission to this consultation paper.

If you wish to discuss any aspect of this submission further, please contact Matthew Kaspura at matthew.kaspura@originenergy.com.au.

Yours sincerely,



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Incentives for efficient network expenditure

Incentivising efficient investment and operation of DER (including export services) is fundamental to the achievement of the National Electricity Objective. In the absence of appropriate incentives, it is likely that investment in export services will be sub-optimal and economic efficiency will not be maximised.

Under the existing regulatory framework there is little incentive for DNSPs to proactively engage in the development of enhanced export services. In fact, the development of export services (and DER in general) is largely at odds with the traditional DNSP business model based on the expansion of “poles and wires” and subsequent growth of the regulatory asset base. Given this, an incentive scheme to encourage investment in export services appears appropriate.

On the other hand, there is also the prospect that DNSPs could over-invest in network capacity for export services in response to customer demand and/or jurisdictional obligations. Energy affordability remains a key concern for customers and over-investment has the potential to undermine affordability. In addition, the dynamic nature of DER and the potential for exogenous intervention e.g. government policy initiatives, raises the prospect of asset stranding and/or underutilised export capacity. An incentive scheme could be incorporated to discourage over-investment in export capacity or only allow such investment where the value to customers is clearly demonstrated and approved.

Given this background we support in principle the application of an incentive scheme to export services investment. We consider the scheme should provide both an incentive for DNSPs to invest in export services, and also establish performance parameters against which to measure achievement of expenditure objectives and the needs of stakeholders. Overall, consideration should be given on how to promote net benefits to the market.

To the extent that export services are incorporated in the definition of a distribution service, we are unaware of any regulatory impediments to adapting existing National Electricity Rules (NER) incentive schemes to export services.

Proponents of the rule change request suggest that the existing expenditure incentive schemes (Efficiency Benefit Sharing Scheme and Capital Expenditure Sharing Scheme) and demand management schemes (Demand Management Incentive Scheme and Demand Management Innovation Allowance Mechanism) could largely be used in their current form to assess export services expenditure. In order to incentivise distribution networks to maintain the performance of export services at a level that customers value proponents suggest that the STPIS scheme could be adapted to export services.

While the STPIS is a performance-related incentive scheme (specifically reliability performance), we consider that adapting the scheme to export services is likely to be extremely difficult. In particular, the STPIS reliability measures are well understood, measurable, readily incorporated into network planning and expenditure and largely static. The key measure for export services on the other hand is the availability of network capacity. Given the evolving nature of DER services, localised network conditions and the potential for exogenous influences, including changes to government policy, availability is likely to be difficult to forecast and a common incentive scheme difficult to develop and apply. For these reasons, we consider that it may be appropriate to develop a separate incentive scheme for export services.

Given the dynamic nature of export services, we consider that the NER should establish the core principles associated with the proposed incentive scheme, with details of the scheme to be determined by the Australian Energy Regulator (AER) through stakeholder consultation.

Any such scheme needs to encourage efficient investment in the short-term and into the future. This requires consideration of the future role of networks and the integration of current and emerging

technologies without limiting potential technologies. We anticipate that the future role of export services and DER more generally within networks will be addressed as part of the current AER review assessing the integration of DER. We would expect this process to incorporate a requirement for DNSPs to detail a network strategy, including the role of export services, to guide future network expenditure. This process should assist in determining appropriate export services performance measures against which to measure achievement of network strategies and means the AER is likely to be well placed to understand the key issues associated with the development of an appropriate incentive scheme.

We expect the development of an export services incentive scheme to be a lengthy iterative process requiring considerable stakeholder engagement to determine:

- the demand for export services;
- the appropriate value that customers place on these services;
- a set of export service standards to establish a performance baseline for the incentive scheme;
- the design of the incentive mechanism, including determining appropriate sharing ratios and potential interactions with existing incentive schemes; and
- the policy toward issues such as unused capacity and who bears the cost associated with the excess capacity.

While we encourage the development of export services and an associated incentive scheme, we consider that a measured approach is necessary. A poorly designed incentive mechanism could encourage over-investment in export capacity adversely impacting affordability whilst not necessarily delivering a net benefit to network customers. It is important to strike the appropriate balance between optimal network development, catering to DER growth and the needs of DER stakeholders and ensuring that expenditure provides a net benefit to all network users. The inherent uncertainty associated with the development of DER and the dynamic policy environment complicates the development of an incentive mechanism and warrants a cautious approach to ensure the avoidance of unintended consequences.

Pricing of export services

We understand the economic arguments made in favour of allowing a charge for the export of electricity. These include providing more efficient signals to DER owners about when to export, self-consume or charge batteries or EVs. However, we are not convinced that the practical implications of such a change, including the impact on customers, has yet been adequately examined. We suggest that the AEMC focus on this as a priority before approving this proposed rule change.

At this stage, the rule proponents are recommending a relatively simple approach which removes the prohibition on charges for export under cl 6.1.4 of the NER. Various arguments have been made in favour of this change, including:

- Economic – allowing for more cost-reflective pricing of DER exports
- Equity – reducing cross-subsidies on other electricity consumers

However, at this stage we only have a high level concept, with little practical explanation on how it would be implemented. The proponents acknowledge that the change could be contentious with various stakeholders. DER customers may find it confusing as well as costly. Further, state Governments may not be supportive and may find alternative policies to achieve similar aims.

The AEMC should consider consumer impacts in more detail

The three proponents all outline issues with DER providers not facing appropriate price signals of their impact on the distribution infrastructure. The rule change requests focus on how DNSPs can recover these costs from DER, and also examine providing DER with signals of the impact of their operation on the market.

The goal of providing economically efficient signals should be balanced against practical considerations. Notably, the administrative cost of determining the impact of any specific DER can be significant compared to the incremental impact of the system on the network, especially for smaller systems. The AEMC should ensure that any signals based on estimates of average impact do not place inefficient costs on smaller systems, and lead to unintended costs.

The AEMC's rule change process should evaluate how the price signals from DNSPs are intended to be communicated to customers, and how this will drive consumer behaviour. At this stage the proposal only describes a high-level concept, with little practical explanation on how it would be implemented.

Two important aspects to consider further are how the price signal may vary by location and time.

- Location – to ensure the most efficient signal is communicated to the market, the export charge should ideally be at a very granular level, such as feeder or postcode. However, this may be complex or costly to implement and the tendency may be to use an easier approach which smears the price across an entire network area. The AEMC should undertake further analysis on how to optimise a cost-effective but granular signal.
- Time – a dynamic signal would be preferable as this would unlock the most potential benefit from the rule change. However, this would need to be capable of being responded to by DER customers, so will require some degree of notice. We suggest a day-ahead or similar period of notice be considered. Further, a degree of automation through VPP platforms would be preferred. For more information on Origin's VPP platform, see below.

A consumer with DER has contact to the NEM through either a retailer or an aggregating market participant (such as a market small generation aggregator, or a demand response aggregator). The rule

change assessment should consider mechanisms to ensure that these market participants are able to effectively pass through these signals to the end user in a way that does not materially increase the complexity of the end user's tariffs or inefficiently increase costs. Additionally, incentives for DER do not have to be financial to encourage specific responses. For example, we have been investigating the potential of behavioural demand response, both stand-alone and with automated devices.

Origin recently launched a mass-market demand response program, Spike, which is available to all Origin residential electricity customers with a digital meter. The program rewards customers for meeting regular energy-saving targets (run as discrete "Spike hour" events). Customers can participate by manually switching off devices or deferring usage (behavioural demand response), as well as device-orchestrated response with controllable devices including EV chargers, smart plugs and air-conditioning controllers. Rewards include cash, gift cards and prizes. Origin has partnered on the platform development with OhmConnect, a leading provider of residential demand response in the US, and expects to achieve meaningful demand response capacity under the Spike program by Summer 2020/21. Early uptake and activity levels have been promising.

We note the ongoing work from the Energy Security Board (ESB) as part of the NEM 2025 project. As part of this work the ESB will be examining how to better provide signals to DER to facilitate efficient integration to the wholesale market. The AEMC should have regard to this work, especially in developing mechanisms for DER providers to see signals for both the wholesale market and the DNSP costs. The AEMC should consider a simple mechanism that includes both DNSP and wholesale impacts.

Origin has developed a proprietary VPP platform to enable the coordination of behind the meter DER. The platform enrolls and connects to a range of DER, including solar, battery storage, controlled load (e.g. electric hot water, electric vehicles and pool pumps) and large appliances (e.g. air conditioning). The platform uses AI to learn and predict the behaviour of energy consumers and optimises each of the assets based on this learned behaviour. Over 85 MW of demand response, across about 11,000 customers, is connected through our platform.

The platform has been designed to integrate with a range of hardware solution providers, allowing customers to have a greater degree of choice when selecting a connected home energy solution. Origin uses the platform to create additional value for our connected customers by:

- Maximising solar self-consumption – generate and store solar energy for later use
- Energy efficiency – optimise asset operation to reduce overall volume of electricity consumed
- Load shifting – shift energy usage to different times of the day, shifting between peak and off-peak
- Peak shaving – reducing the peak energy usage amount and reduce network demand charges (if applicable)

Implementation – jurisdictional issues

The rule proponents acknowledge that allowing a distribution charge for exports may be controversial and that state governments may respond in different ways. Two recent examples of states already adapting their policies are provided in South Australia and Western Australia.

South Australia is currently implementing a range of changes to distributed solar systems including the requirement for remote disconnection and new solar sponge tariffs. These changes are most immediately aimed at ensuring grid security and reliability but they also impact longer-term reforms which are related to this rule change. For example, the proposal for the emergency disconnection of solar systems is a blunt instrument but the intention is to move to dynamic export limits from 2021. Further, the solar sponge tariff will require enabling devices for customers to fully take advantage of the new tariff structure.

Western Australia also has introduced changes to its solar feed-in tariffs which are aimed to improve incentives to manage low minimum demand periods in the middle of the day, largely attributed to increasing amounts of distributed solar PV. For new rooftop PV systems the solar FiT will be changed from a flat rate of about 7c/kWh to 3c/kWh, with a new 3-9pm 'peak' rate set at 10c/kWh to encourage self-consumption, the use of batteries, EVs, west-facing solar systems and demand management.

The interaction with state policy is crucial as it may outweigh or impede the signals provided by the current rule change.

Implementation – potential grandfathering arrangements

If a distribution charge for exports is allowed, consideration will need to be given to potential grandfathering arrangements. As a starting point, the new arrangements could apply to new purchases of solar systems from a prospective date. This could include those customers who are upgrading existing systems or inverters.

A more difficult decision would be how to transition existing DER customers to the new arrangements. One potential solution is to allow a transition period, of approximately 3-4 years. This would ensure that the economic payback period on which a customer had invested in their system had generally been maintained.

Voltage management

Currently, networks services are funded from consumers through Distribution Use of System (DUOS) charges. A new framework for recovering costs for export services will require a mechanism for evaluating what part of network's incremental costs relates to DER provision, and what is related to the provision of energy to consumers. This would be a complex task and the rules framework should ensure that DER providers are not cross subsidising the normal operating costs of the network from charges to DER. Additionally, determination of DUOS should account for this separate revenue stream.

An example of the difficulty in allocating costs is the management of voltage in the network. High voltage issues can be caused by multiple DER exporting into the grid at the same location. However, while DER is contributing to voltage issues, these are due to a wide variety of factors.¹ Placing an export charge on a DER provider to manage voltage issues could act as a substitute for obligations on the DNSP to maintain security.

¹ UNSW Centre for Energy and Environmental Markets, 2020, *Voltage Analysis of the LV Distribution Network in the Australian National Electricity Market*, pg 168